

Measurements

	Valve	H (mm)	L (mm)	No Ribs	No. Ribs/ls
Holotype (USNM 241806)	R	5.7	7.2	18	—
Paratypes (USNM 241807)	L	5.0	6.9	—	9
(USNM 241808)	R	6.4	8.4	22	—
(USNM 241809)	R	6.6	8.9	21	—
(USNM 241810)	R	5.1	6.9	21	—
(USNM 241811)	R	5.0	6.6	18	—
(USNM 241812)	R	5.4	7.0	20	—
(USNM 241813)	L	4.4	6.3	—	4
(USNM 241814)	L	5.4	7.8	—	7
(USNM 241815)	L	5.0	7.0	—	6

DISCUSSION

Varicorbula chowanensis is most similar in shape to *V. caloosae* (Dall, 1898). However, it may be distinguished from the latter by its smaller size, more gently sloping anterior and posterior dorsal margins, narrower umbonal region, and its broader, more distinct posterior region (Fig. 2). The *Varicorbula* lineage of the Neogene of the Atlantic and Gulf Coastal Plains is represented by at least four species (Fig. 2). *Varicorbula chipolana* from the lower Miocene Chipola Formation is the earliest reported member of the lineage. The evolutionary relationships of these species remains to be clearly demonstrated.

Type locality: Pliocene deposits along the west bank of the Chowan River, "Yorktown" Forma-

tion, 2.0 kilometers upstream (north) of bridge where U. S. Route 17 crosses Chowan River, Bertie County, North Carolina, locality 27 of Bailey (1973).

Types: Holotype, right valve, USNM 241806, ventral margin partially broken; figured paratype, left valve, USNM 241807, measured and/or figured USNM paratypes, 241808–241815; undesignated paratypes, 3 fragmentary valves. USNM 241816.

LITERATURE CITED

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TWO NEW *RABDOTUS* (PULMONATA: BULIMULIDAE) FROM BAJA CALIFORNIA, MEXICO

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ABSTRACT

Two new species of the land snail genus Rabdotus are described from Baja California Sur, Mexico. R. gigantensis is reported from the Sierra de la Giganta and R. laevapex is reported from Isla Cerralvo.

The bulimulid genus *Rabdotus* contains most of the larger land snails of Baja California Sur,

Mexico. Although snails of this genus also inhabit much of mainland Mexico and of the southern

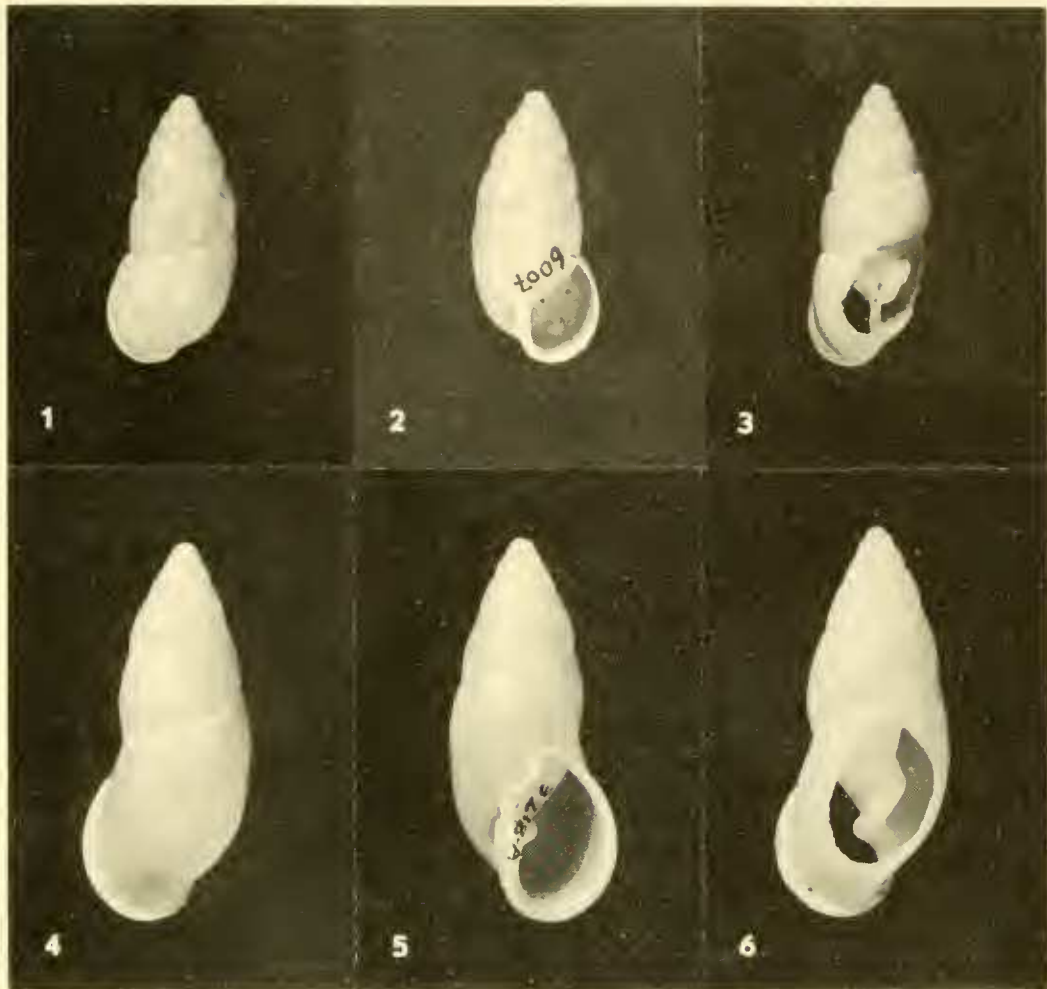


FIG. 1 and 2. *Rabdotus gigantensis* Christensen and Miller, new species. San Javier, Baja California Sur, Mexico. Holotype. CASGTC No. 57937. Shell height 19.7 mm.

FIG. 3. *Rabdotus gigantensis* Christensen and Miller, new species. Shell opened to show columellar lamina. Paratype. CASGTC No. 57944. Shell height 20.5 mm.

FIG. 4 and 5. *Rabdotus laevapex* Christensen and Miller, new species. Isla Cerralvo, Baja California Sur, Mexico. Holotype. CASGTC No. 57942. Shell height 27.8 mm.

FIG. 6. *Rabdotus laevapex* Christensen and Miller, new species. Shell opened to show columellar lamina. Paratype. CASGTC No. 57943. Shell height 28.4 mm.

and southwestern United States, about three quarters of the over thirty known species are confined to the southern half of the Baja California peninsula and nearby islands. This report contains descriptions of two new species from this region, one recorded from several localities in the Sierra de la Giganta, the principal mountain range of the central part of the peninsula, the other known only from Isla Cerralvo, the southernmost island in the Gulf of California.

***Rabdotus gigantensis* Christensen and Miller, n. sp.**

Description. Shell (fig. 1-3) solid, 16.9-21.3 mm in height (mean height of twenty adult shells from type lot 19.2 mm), 7.8-10.2 mm in diameter (mean 8.8 mm), ratio of height to diameter 1.85-2.36 (mean 2.17), ratio of shell height to aperture length 2.18-2.62 (mean 2.44), whorls 5-7/8 to 6-7/8 (mean 6.42); spire convex in outline; embryonic whorls 2 to 2-1/4 in number, rounded,

with strong regular axial riblets the interstices of which are crossed by fine spiral threads; post-nuclear whorls convex, sutures moderately impressed; surface of shell weakly shining, sculpture of early postnuclear whorls of numerous weak growth wrinkles which may bear minute hyphen-like granules arranged in spiral rows, this sculpture becoming obsolete in later whorls; color of shell light brown except peristome and narrow subsutural band sometimes whitish; last whorl slightly inflated, flattened at periphery, often ascending slightly at aperture; columellar margin of peristome reflected, basal and palatal margins weakly reflected, not revolute; terminations of peristome joined by a thin to moderately thick parietal callus; columella with a well-developed sinuous lamina located deep within the aperture; basal region of shell deeply rimate.

Soft parts unknown.

Type Locality. Baja California Sur, Mexico, at San Javier, in a large lava rockslide immediately south of the mission, elevation 350-450 m.

Holotype. California Academy of Sciences Geology Type Collection No. 57937. Height 19.7 mm, diameter 9.3 mm, length of aperture 8.2 mm, whorls 6-5/8. Collected by W. B. Miller, 25 October 1972.

Paratypes. 46 specimens collected by W. B. Miller, 24 October 1971; 53 specimens collected by C. C. Christensen, P. N. D'Eliscu, W. B. Miller, R. L. Reeder, and D. B. Richman, 25 October 1972. Paratypes in the collections of the California Academy of Sciences and Delaware Museum of Natural History (No. 112458) and in the private collections of R. L. Reeder and the authors.

Additional Paratype Material. Specimens have been examined from the following additional localities in Baja California Sur: inland of San Jose de Magdalena on the road to Guadalupe, 43.3 km west of the Transpeninsular Highway, C. Church, 11 December 1970; 11.3 km north of San Jose Comondu, C. Church, November 1969; San Jose Comondu, R. J. Drake, July 1953, and V. Roth, 15 February 1966; 1.0 km east of San Javier, C. Church, 11 December 1970; 15.7 km west of San Javier on the road to Santo Domingo, C. Church, 12 December 1970; 72.4 km south of Loreto and 49.9 km northeast of Villa Insurgentes on Transpeninsular Highway, in lava

rockslides on south side of arroyo, elevation 275 m, W. B. Miller, 23 October 1971; road between El Obispo and Rancho Tinajitas, I. L. Wiggins, 20 November 1959.

Remarks. *Rabdotus gigantensis* is distinguished by its small size, weakly reflected peristome, columellar lamina, and coloration. *R. levis* (Dall) is similar in overall dimensions and form but lacks a columellar lamina; its shell is usually marked with dark axial streaks. *R. dentifer* (Mabille) and *R. chamberlini* (Hanna) are small snails each with a columellar lamina but with the peristome strongly reflected or revolute.

Rabdotus gigantensis is most often found in large talus slides of volcanic rock and is known to occur over nearly the entire length of the Sierra de la Giganta. Although dead shells of this species are common in some localities, no living specimens have yet been collected.

The species is named for the mountains in which it lives.

***Rabdotus laevapex* Christensen and Miller, n. sp.**

Description. Shell (fig. 4-6) solid, 24.8-28.6 mm in height (mean height of eight adult shells from type lot 27.7 mm), diameter 11.8-13.4 mm (mean 12.6 mm), ratio of height to diameter 2.10-2.29 (mean 2.19), ratio of shell height to aperture length 2.08-2.25 (mean 2.18), whorls 5-7/8 to 6-3/8 (mean 6.12); spire weakly convex in outline; embryonic whorls not readily distinguishable from postnuclear shell; first two whorls rounded, smooth or with subobsolete axial wrinkles; later whorls convex, sutures weakly impressed, surface of shell shining or dull, sculpture of weak growth wrinkles; color of shell light brown except peristome and narrow subsutural band sometimes whitish, shell sometimes with light axial streaks; last whorl inflated, rounded at periphery, not ascending or descending at aperture; columellar margin of peristome reflected, basal and palatal margins reflected and revolute; terminations of peristome joined by a thin white or clear parietal callus; columella with a strong spiral lamina which is prominently visible within the aperture; basal region of shell deeply rimate.

Pulmonary veins and pallial roof between veins and hindgut light brown; mantle not marked with dark spots.

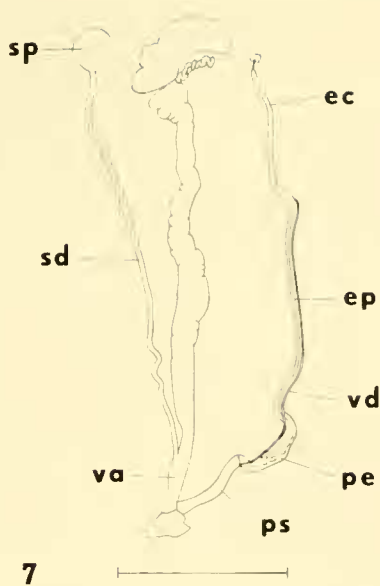


FIG. 7. *Rabdodus laevapex* Christensen and Miller, new species. Genitalia of holotype. Abbreviations: *ec* epiphallic caecum; *ep* epiphallus; *pe* upper portion of penis; *ps* penial sheath and lower portion of penis; *sd* spermathecal duct; *sp* spermatheca; *va* vagina; *vd* vas deferens. Scale line 10 mm.

Genitalia (fig. 7) typical of the genus in general structure, epiphallus usually greater in length than penis or epiphallic caecum, comprising over 40% (average of 6 specimens) of the combined length of these three structures; penis and epiphallic caecum approximately equal in length, vagina much shorter than penis; dimensions of genitalia of holotype (figured): penis 9 mm in length, epiphallus 16 mm, epiphallic caecum 9 mm, vagina 3 mm, spermathecal duct 26 mm.

Type Locality. Baja California Sur, Mexico, on west side of Isla Cerralvo, approximately 0.5 km inland of the beach at El Limofia anchorage, in a small rockslide on the south slope of a narrow arroyo, elevation 50-100 m. Living snails were found sealed to small rocks.

Holotype. California Academy of Sciences Geology Type Collection No. 57942. Height 27.8

mm, diameter 12.2 mm, length of aperture 12.8 mm, whorls 6. Collected by C. C. Christensen, 8 August 1974.

Paratypes. 7 adult and 5 immature specimens collected with the holotype. Paratypes in the collections of the California Academy of Sciences and Delaware Museum of Natural History (No. 112457) and in the private collections of the authors.

Remarks. The sculpture of the embryonic whorls is the outstanding character of *Rabdodus laevapex* and distinguishes it from all other members of the genus. In other *Rabdodus* these whorls bear regular axial riblets; in *R. laevapex* these are smooth or bear only weak wrinkles which do not resemble the riblets of other species. This condition is not the result of wear, as it is found in the shells of live-collected immature specimens of 2-1/2 whorls. The name assigned to this species refers to its smooth apex.

Although the shells of *Rabdodus lamellifer* (Pilsbry), *R. rimatus* (Pfeiffer), and *R. spirifer* (Gabb) resemble that of *R. laevapex* in size and general form, these species differ from the new species anatomically; in each of them the penis is greater in length than either the epiphallus or epiphallic caecum, and the length of the vagina is more nearly equal to that of the penis than is the case with *R. laevapex*.

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